Type: Poster

## Deep Search for and Investigations of Untriggered Gamma-Ray Transient Events Using Fermi/GBM Data

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Gamma-Ray Burst Monitor (GBM) on board Fermi, designed to detect short transient events, has been continuously observing the entire sky in gamma-ray since its launch in 2008. Over the 14 years, GBM has produced the largest database of all-sky observations in gamma rays with high time resolution continuous data (2 µs; CTTE since July 2010). Such continuous data contain a wealth of relatively weaker short transient events that did not trigger the detectors. These short gamma-ray transient events can arise from several different astrophysical origins and scenarios such as GRBs, thermonuclear bursts from accreting neutron star systems, bursts from magnetars. Identification and investigation of untriggered events is crucial towards fully understanding the physical mechanisms responsible for the observed bursts. We searched for untriggered short gamma-ray transient events among the 11-year (2010-2021) GBM CTTE database. The search was done using three independent methods: 1. Signal-to-noise-ratio based, 2. Poisson statistics based, and 3. Bayesian statistics based. Each method has four different modes with different time and energy resolution, targeting different types of events. After the search, we first filtered out false event identifications caused by the spacecraft's orbits (before and after the SAA passages) as well as known triggered events or Solar flares. The rest of the events found in the search were subsequently subjected to our classification algorithm. In this poster, we describe our search and classification methods and present the results that we obtained. The search results and the properties of the identified events will be publicly available on our comprehensive burst properties portal (http://magnetars.sabanciuniv.edu).

## Track

GRBs

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